DETAILED ACTION

Claims 1-17 & 19-21 are pending as amended on 06/26/09.

Claims 1-15 & 19 are withdrawn from consideration.

Response to Amendment

1. This final action is a response to the amendment filed on June 26, 2009. Objections to the specification have been withdrawn in light of the new sheets submitted on June 26, 2009. Claim 18 has been cancelled, while claim 16 has been amended. The previous rejections of these claims under 35 U.S.C. 102(b) has been maintained. Claims 20-21 have been added.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless – (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 16-17** are rejected under 35 U.S.C. 102(b) as being anticipated by *Haggenmueller et al.* as detailed in the previous action.

4. **Claims 16-17 & 20** are rejected under 35 U.S.C. 102(b) as being anticipated by *Newman et al.*, US 6,299,812.

5. This reference teaches a continuous ribbon of nanotubes dispersed in a polymer matrix and aligned to be parallel to a principal direction (abstract, [Col. 1, 42-57]). This film can be formed of thermoplastic polymers such as polystyrene [Col. 3, 35]. Anisotropic alignment of the fibers in such a composite along a main axis are achieved via conventional methods which apply pulling, stretching, extrusion, and shearing forces [Col. 3, 16-31].

6. **Claims 16-17 & 21** are rejected under 35 U.S.C. 102(e) as being anticipated by *Glatkowski et al.*, US 7,060,241.

7. This reference teaches a continuous polymer ribbon of nanotubes which are aligned in a principal direction using conventional polymer processing technology [Col. 7, 49-60] such as shearing, stretching or elongating. This film can be formed of styrenic polymers [Col. 6, 22-33], and such a method of manufacture is scalable for any of a number of product thicknesses, including 100 microns, which falls within the claimed range [Col. 6, 18-19].

8. **Claims 16-17** are also rejected under 35 U.S.C. 102(b) as being anticipated by *Glatkowski et al.*, US 6,265,466 (incorporated by reference into Glatkowski '241).

9. This reference also teaches a continuous ribbon of nanotubes which are mechanically aligned in a principal direction using conventional polymer processing technology (throughout, see abstract). Polymeric component includes styrenic polymers.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. **Claims 20-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Glatkowski et al.*, US 6,265,466 (which is also incorporated by reference into the aforementioned Glatkowski '241).

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. The teachings of Glatkowski '466 have been detailed above. Although this reference does not expressly disclose the use of *polystyrene per se*, it does disclose the use of styrenic polymers [Col. 3, 43-52], and it would have been obvious to one of ordinary skill in the art at the time of the instant invention to use polystyrene in the product, given that this is a common member of the group of "styrenic polymers", which clearly encompasses use of polystyrene.

14. With regard to **claim 21**, although this reference does not expressly disclose a ribbon of thickness in a range from *80-120 microns*, it does teach ribbons which are typically less than 1 mm [Col. 5, 9-11].

15. It would have been obvious to one of ordinary skill in the art to scale the size of the oriented nanocomposite down to any desired thickness – e.g. much thinner than the disclosed 1 mm, and even down to the width of a few parallel nanotubes – depending on the intended application of the final product [Col. 5, 11-14].

Response to Arguments

16. Applicant's arguments, see response, "Remarks/Arguments," filed June 26, 2009, with respect to the rejection of claims 16-18 have been fully considered but are not persuasive. Words such as "ribbon" (and the essentially redundant modifier

"continuous") are general terms which must be given their broadest reasonable interpretation and would not distinguish the claims as written over the prior art. If the specific shape of the Applicant's product is believed to be critical to the patentability of this invention, Examiner suggests incorporating language into the claims that illustrates this shape in a definite manner.

17. The ribbons of nanocomposite taught by Haggenmueller are drawn into products with high alignment as previously cited (e.g., abstract - "...nanotubes in the fibers are well aligned, with mosaic distribution FWHMs as small as 4 [degrees]"). This degree of alignment is evidenced by the greatly improved conductive properties of the resulting nanocomposites and confirmed by spectroscopic testing methods.

Conclusion

Examiner also cites *Dupire et al.*, US 6,331,265 and *Smalley et al.*, US 6,790,425 as prior art which is relevant to the present claims.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN BLADES whose telephone number is (571)270-7661. The examiner can normally be reached on M-Th (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Katarzyna Wyrozebski can be reached on (571)272-1127. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.B./
Patent Examiner

/KAT WYROZEBSKI/
Supervisory Patent Examiner, Art Unit 1791